INVENTORY OF HAZARDOUS WASTE GENERATION AT FEDERAL FACILITIES IN THE PRAIRIE PROVINCES

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ABSTRACT

An investigation into hazardous waste generation and its current management practices at federal facilities in the prairie provinces was performed in two phases. The first was an assessment of existing documents for military bases, and the second, a mail survey for non-military facilities.

About 19,000 tonnes of hazardous waste were estimated to be generated annually by the 70 facilities assessed. In addition, some 46 tonnes of PCBs are currently being held at military bases. Waste streams were classified into 48 waste types using the categorization system developed by the University of California at Davis (UCD).

Results of this survey could be used to synthesize a regional waste profile sufficient for framework management planning for federal facilities.

SUMMARY

1. This report presents an inventory of hazardous wastes generation at federal facilities in the prairie provinces: Manitoba, Saskatchewan and Alberta.

2. The main objectives of this study were to:
- determine the types, quantities and sources of generation of hazardous wastes from federal facilities in the prairie provinces,
- investigate and report on current on/off site methods of treatment/disposal of hazardous wastes performed by federal facilities in the prairie provinces, and
- develop a data base that is compiled and arranged in a format that can be readily utilized and updated.

3. Hazardous wastes are defined as those identified in Appendix I, using the UCD (University of California at Davis) waste classification system. A total of 103 out of the 107 UCD waste types are considered to be hazardous by this inventory study.

4. Total hazardous wastes produced annually are estimated to be 18,885 tonnes. Of this amount, approximately 86% is animal wastes (UCD 272).

5. The hazardous wastes identified have been segregated into 48 UCD waste types, and grouped into four categories: inorganic, organic, sludge and miscellaneous. The organic category appears to account

for over 90% of the federal facilities' hazardous waste production; the sludge category, for 6%, and the remaining categories, for less than 1%.

6. Significant quantities (46 tonnes) of PCBs are currently being stored in capacitors and transformers at military facilities.

7. The data assembled by this study represents the best available information of hazardous waste generation at federal facilities in the prairie provinces, and provides a reasonable basis for planning a waste management strategy.

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1. INTRODUCTION

An effective management system for hazardous waste generated from federal facilities must be based on accurate information regarding its sources, quantities and characteristics. The general objective of this study is to develop a knowledge base of such information. The specific ends of this study are to:

- determine the types, quantities and sources of generation of hazardous wastes from federal facilities in the prairie provinces,

- investigate and report on the current on/off-site methods of treatment/disposal of hazardous wastes generated by federal facilities in the prairie provinces, and

- establish a data base that is compiled and arranged in a format that can be readily utilized and updated.

This report presents the methodology employed and the resulting data of the study.

2. STUDY METHODOLOGY

The hazardous waste generation study was conducted in two phases. The first activity was to collate and analyze the existing documents - 1982 Hazardous and Toxic Waste Inventories for DND Bases in the Prairie Provinces - provided by the EPS district offices of the Western and Northern Region. In addition, certain military bases were contacted by telephone directly to update and clarify the information presented in the 1982 inventories. A total of 17 military bases constituted this portion of the study.

The next phase of the study included a mail survey of non-military federal facilities within the prairie provinces. The federal publication, Index to Federal Programs and Services 1983, and the questionnaires completed on hazardous material use in 1982 by the EPS district offices of Alberta and Manitoba, were consulted to identify the potential and existing generators of hazardous waste. A mail survey package was then sent to each facility identified. The package included a manual of the UCD (University of California at Davis) waste classification system (Appendix I), an instruction sheet of treatment/ disposal codes and methods (Appendix II), a questionnaire (Appendix V), and an example of a completed questionnaire. A total of 59 survey packages were mailed. The areas included in the questionnaire were:

- number of employees,
- specific waste streams,
- generation rates, and
- current on and off site waste treatment and disposal methods.

The mail survey was followed by telephone contacts to validate information supplied by respondents in the completed questionnaires.

Information about hazardous waste generation and management practices for those facilities which did not respond to the survey, was obtained from the 1982 completed questionnaires, if available therein.

2.1 Waste Classification Scheme

For the purpose of waste management, it was necessary to develop or select a classification scheme that is detailed enough to fulfill the goal of this survey. The UCD system was developed by the University of California at Davis. It was selected for use in this survey for the following reasons:

- it provides information of waste phase (liquid, solid, or sludge), heat content and presence of heavy metals;
- it allows physical and chemical properties of a waste stream to be identified and compared; and
- it allows for matching of waste streams with specific treatment or disposal technologies (i.e., specific unit operations).

There are 107 UCD waste types (Appendix I) including the "other" type (UCD 536) which was created for this inventory study to accommodate battery carcasses and solvent containers. A total of 103 UCD waste types were considered to be hazardous for the purpose of this inventory study.

Management and control of radioactive wastes are the responsibility of Atomic Energy Control Board; therefore, they are not included in this study, which was intended to identify only those wastes that have to be handled by the facilities themselves.

3. RESULTS AND DISCUSSION

3.1 Questionnaire Response

Of 59 questionnaires distributed to non-military federal facilities, 50 (84%) were returned. Two reported "zero" hazardous waste generation (Appendix IV).

3.2 Hazardous Waste Generation

It is estimated that the 70 federal facilities assessed (Appendix VI) generate as much as 18,885 tonnes of hazardous waste annually (Table I). Of this amount, approximately 86% is animal wastes (UCD 272), such as manure, specimen, carcasses, intestines, blood, etc.

In addition, there are 46 tonnes of PCBs currently being stored in capacitors and transformers at military facilities (Appendix III).

TABLE I

ESTIMATED GENERATION OF HAZARDOUS WASTE
FROM FEDERAL FACILITIES IN THE PRAIRIE PROVINCES, 1984 unit: kg/year

UCD WASTE CATEGORY	ALBERTA	MANITOBA	SASKATCHEWAN	TOTAL
INORGANICS				
(11) ACIDIC SOLUTIONS				
(111) Acidic solutions with heavy metals	2,500	1,200	2,500	6,200
(112) Acidic solutions with other metals and non-metals	-	9	30	39
(113) Other acidic solutions	20	120	20	144
(12) ALKALINE SOLUTIONS				
(121) Alkaline solutions with heavy metals	-	120	-	120
(123) Other akaline solutions	-	-	10	10
(14) OTHER AQUEOUS (SALT) SOLUTIONS				
(141) Other aqueous (salt) solutions with heavy metals	-	-	592	592
(144) Other aqueous solutions	410	996	533	1,939
(145) Brine	16,800	-	750	17,550
(146) Solutions containing cyanide	-	-	10	10
(15) INORGANIC SOLIDS				
(151) Inorganic solids	-	-	8	8
(152) Inorganic chemicals	unknown	unknown	15	15
(16) OTHER INORGANIC WASTES				
(161) Asbestos-containing wastes	458	unknown	unknown	458
(165) Spent catalyst	-	-	0.3	0.3
(167) Unidentified inorganic wastes	0.6	-	-	0.6
ORGANICS				
(21) SPENT SOLVENTS				
Halogenated Solvents				
(211) Spent solvents with heavy metals	3	4	-	7
(212) Spent solvents with other metals	-	4	43	46
(213) Other halogenated solvents including mixed	265	410	1,074	1,749

TABLE I continued

UCD WASTE CATEGORY	ALBERTA	MANITOBA	SASKATCHEWAN	TOTAL
Non-Halogenated Solvents				
(214) Spent solvents with heavy metals	3,455	1,006	2,616	7,080
(215) Spent solvents with other metals or non-metals	27,404	740	3,600	31,740
(216) Other non-halogenated solvents, including mixed	2,090	12,680	6,708	21,480
Unspecified Solvents				
(217) Unspecified solvents	5,210	1,490	15,670	22,370
(22) OTHER ORGANIC LIQUIDS				
(221) Other organic liquids with halogens and metals	0.05	-	4	4
(224) Other organic liquids	20	310	2,700	3,000
(22) ORGANICS RESIDUES				
(225) Aqueous solutions with non-halogenated organic residues 10%	-	-	48	48
(226) Aqueous solutions with halogenated organic residues 10%	-	-	24	24
(227) Aqueous solutions with non-halogenated organic residues 10%	-	45	-	45
(23) ORGANIC SOLIDS				
(231) Organic solids with halogens	-	7	-	7
(232) Organic solids without halogens	-	6	-	6
(24) OTHER ORGANIC WASTES				
(241) Pesticides and wastes	284	1,230	2,121	3,635
(243) Pharmaceuticals and wastes	180	264	38	482
(244) Photochemicals and wastes	2,000	2,200	6,100	10,300
(245) Off-specification or aged organics	-	-	30	30
(253) Detergent degreaser	-	-	2,450	2,450
(257) Phenolic wastes	-	60	12	72

TABLE I continued

UCD	WASTE CATEGORY	ALBERTA	MANITOBA	SASKATCHEWAN	TOTAL
(26)	POLYMERIC MATERIAL AND WASTES				
(261)	Polymeric resin	2,000	-	-	2,000
(262)	Latex and wastes	400	1,400	[illegible]00	2,400
(27)	BIOLOGICAL WASTES				
(272)	Other biological wastes	12,099,000	2,713,000	1,503,000	16,315,000
(28)	OILY WASTES				
(281)	Waste oil and mixed oil	483,000	280,000	58,000	821,000
(289)	Oily wastes with water	440,000	480	14,310	454,800
SLUDGE					
(44)	OTHER SLUDGES				
(441)	Lime sludge	-	-	1,099,000	1,099,000
(454)	Paint sludge	-	2,230	910	3,140
MISCELLANEOUS					
(509)	Gas cylinders or containers	-	40	9,200	4,240
(512)	Spill clean-up	-	150	-	150
(513)	Laboratory waste chemicals (diverse)	660	693	48	1,405
(521)	Spent cartridge filters	-	11	-	11
(525)	Metal dust and machining wastes	-	200	-	200
(528)	Pathogenic Wastes	-	680	100	780
(531)	Contaminated rags	-	300	-	300
(532)	Equipment and/or containers contaminated with pesticides	162	31	15	208
(536)	Other (battery carcasses, solvent containers)	17,530	5,830	3,100	26,460
TOTAL		13,118 $\times 10^3$	3,028 $\times 10^3$	2,739 $\times 10^3$	18,885 $\times 10^3$

- PCB wastes (UCD 242) are given in Appendix III.

3.2.1 Types of Waste Generated

Table I shows that hazardous wastes generated at federal facilities in the prairie provinces have been classified into 48 UCD waste types including PCBs. They can be further grouped into 4 general categories: inorganic (UCD 111-167, 244), organic (UCD 211-243, 245-289), sludge (UCD 412-457) and miscellaneous (UCD 509-536) (Table II). The organic category accounts for over 90% of the waste generated; the sludge category, for 6%, and the remaining categories, for less than 1%.

TABLE II

SUMMARY OF ESTIMATED HAZARDOUS WASTE GENERATION
AT FEDERAL FACILITIES IN THE PRAIRIE PROVINCES, 1984

unit: kg/year

Province	Inorganic*	Organic	Sludge	Miscellaneous
Alberta	34,600	13,063,000	18	20,320
Manitoba	4,800	3,013,000	2,200	7,930
Saskatchewan	10,400	1,616,000	1,099,900	12,420
Total	49,900	17,692,000	1,102,200	41,000
	(0.3%)	(93.7%)	(5.8%)	(0.2%)

* UCD 244, photochemicals and wastes, is assigned to the "inorganic" category

3.3 Existing Treatment and Disposal Practices

Wastes generated by federal facilities are treated and disposed of by a number of methods as shown in Table III.

TABLE III

EXISTING TREATMENT/DISPOSAL METHODS

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse	x	x
landfill	x	x
secure landfill	x	x
thermal destruction	x	x
open burning	x	
biological treatment	x	x
physical/chemical treatment*	x	
sewer	x	
contractor (method used unknown)		x
waste exchange program		
other	x	x

*On-site physical/chemical treatment practices are primarily neutralization and evaporation.

The following sections are to summarize the findings for high-concern waste types to assist in hazardous waste management planning.

3.3.1 Waste Oil

Estimated Quantity: 821,000 L/year

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse*	x	x
landfill	x	x
secure landfill		
incineration	x	
open burning	x	
physical/chemical treatment		
sewer	x	
contractor (method used unknown)		x
waste exchange		
other	x	

*Including road oiling

- landfilling: 9,000 L/year
- road oiling: 7,000 L/year
- sewer: 744 L/year
- contractor (method used unknown): 296,000 L/year

Problem Identification:

- destination of "waste oil and mixed oil" handled by contractors unknown.

- landfilling, sewer and direct discharge.

- underground storage tanks (more than 10) unregulated by the federal government.

3.3.2 Non-halogenated Solvents

Estimated Quantity: 60,000 L/year

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse*	x	x
landfill		x
secure landfill		x
incineration	x	x
open burning	x	
physical/chemical treatment	x	
sewer	x	
contractor (method used unknown)		x
waste exchange		
other	x	

*including road spreading

- landfilling: 1,440 L/year
- sewer: 2,500 L/year
- other (unknown; holding tank): 3,200 L/year
- road spreading: 1,100 L/year
- contractor: 16,000 L/year

Problem Identification:

- destination of "non-halogenated solvents" handled by "other" and "contractor" unknown.

- landfilling, sewer and direct discharge, and road spreading.

3.3.3 Halogenated Solvents

Estimated Quantity: 1,800 L/year

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse		x
landfill		x
secure landfill		
incineration	x	x
open burning	x	
biological treatment		
physical/chemical treatment	x	
sewer	x	
contractor (method used unknown)		x
waste exchange		
other	x	

- landfilling: 3 L/year
- open burning: 5 L/year
- sewer: 20 L/year
- contractor: 140 L/year
- other: 310 L/year

Problem Identification:

- destination of "halogenated solvents" handled by "other" and "contractor" unknown.

- sewer and direct discharge, landfilling, and open burning.

3.3.4 Unspecified Solvents

Estimated Quantity: 22,000 L/year

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse	x	x
landfill		x
secure landfill		
incineration		
open burning	x	
biological treatment		
physical/chemical treatment	x	
sewer	x	
contractor (method used unknown)		x
waste exchange		
other	x	

- landfilling: 1,700 L/year
- sewer: 6,600 L/year
- contractor: 7,700 L/year
- other: 2,000 L/year

Problem Identification:

- destination of "unspecified solvents" handled by "other" and "contractor" unknown.

- landfilling, sewer and direct discharge.

3.3.5 Pesticides and Wastes

Estimated Quantity: 3,435 kg/year

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse		
landfill	x	x
secure landfill		x
incineration		
open burning	x	
biological treatment*	x	
physical/chemical treatment		
sewer		
contractor (picked up by prov. govt.)		x
waste exchange		
other (storage; unknown)	x	x

* land application of rinse water

- landfilling: 430 kg/year (including 230 kg/year of liquids)
- open burning: 5 kg/year
- land application: 1,000 kg/year
- secure landfill: 1,956 kg/year (Animal Pathology Lab, Agriculture Canada, Saskatoon)

- current amount of surplus pesticides held in storage rooms waiting for treatment/disposal instructions: 1,240 kg.

Problem Identification:

- no guideline available for land application on rinse water disposal
- open burning and landfilling of liquids
- no federal thermal destruction unit available for pesticide treatment
- status of the secure landfill site unknown

3.3.6 Pesticide Containers

Estimated Quantity: 200 kg/year (about 2,000 containers/year)

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse		x*
landfill	x	x
secure landfill		x
incineration		
open burning	x	
biological treatment		
physical/chemical treatment		
sewer		
contractor (method used unknown)		x
waste exchange		
other	x	x

*Experimental Farm, Agriculture Canada (Indian Head, Saskatchewan) reported that 5 kg/year of empty pesticide cans are off-site recycled.

- landfilling: 90 kg/year
- open burning: 20 kg/year
- contractor: 20 kg/year

Problem Identification:

- destination of pesticide cans handled by "contractor" unknown.

- landfilling and open burning

3.3.7 Lead-acid Batteries

Estimated Quantity: 25,910 kg/year (about 1,300 batteries/year)

Current Treatment/Disposal Methods:

METHODS	ON-SITE	OFF-SITE
recycle/recovery/reuse		x
landfill	x	x
secure landfill		
incineration		
open burning		
biological treatment		
physical/chemical treatment		
sewer		
contractor		x
waste exchange		
other		

- landfilling: 1,840 kg/year
- contractor: 120 kg/year

Problem Identification:

- landfilling of recyclable material

3.3.8 PCBs

Estimated Quantity: 46 tonnes

Current Treatment/Disposal Methods:

- being stored in transformers and capacitors at military facilities.

Problem Identification:

- no federal destruction unit available for PCBs treatment

A P P E N D I C E S

APPENDIX I

UNIVERSITY OF CALIFORNIA AT DAVIS (UCD) WASTE CLASSIFICATION SYSTEM

UCD WASTE CATEGORY	DESCRIPTION
INORGANICS	
(11) ACIDIC SOLUTIONS	Typically hydrochloric acid (HCl), sulfuric acid (H_2SO_4), or nitric acid (HNO_3).
(111) Acidic solutions with heavy metals	Including antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, indium, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin, vanadium, and/or zinc; pickle liquor rinse water; battery acids;
(112) Acidic solutions with other metals and non-metals	Typically contain an alkali metal, i.e. sodium (Na), potassium (k); Demineralizer regenerant
(113) Other acidic solutions	Acidic solutions not containing metals or non-metals; acidic solution with no components information provided
(12) ALKALINE SOLUTIONS	Usually contain sodium hydroxide (NaOH), potassium hydroxide (KOH), or ammonium hydroxide (NH_4OH)
(121) Alkaline solutions with heavy metals	See (111) above
(122) Alkaline solutions with other metals and non-metals	See (112) above
(123) Other alkaline solutions	Alkaline solutions not containing metals or non-metals; alkali solution with no components information provided
(13) METAL-FINISHING SOLUTIONS	From process identification on manifest, i.e. 'metal plating', 'pickling bath', etc.
(131) Metal-finishing solutions - acidic	Typically containing copper, tin, lead, or cadmium
(132) Metal-finishing solutions - alkaline	See (131) above

UCD WASTE CATEGORY		DESCRIPTION
(133)	Spent pickle liquor	Acids typically containing iron, fluoride, hydrochloric acid, sulphuric acid, nitric acid.
(14)	OTHER AQUEOUS (SALT) SOLUTIONS	Acidic or basic solutions which are neutralized by generator, yielding a salt solution
(141)	Other aqueous (salt) solutions with heavy metals	Cleaning solutions from heat treating salt bath, contain barium, aluminum, (see 111)
(142)	Other aqueous (salt) solutions with heavy metals	Cleaning solutions from tanks, trucks or railroad tankers (see 112)
(143)	Solution containing other reactive anions	Includes fluoride, hypochlorite, or bromate; excludes cyanide or sulphide, or not stated
(144)	Other aqueous solutions	Aqueous solutions (14) other than (141), (142), (143), (145), (146), or (147)
(145)	Brine	Salt solutions after neutralization or chlor/alkali productions
(146)	Solution containing cyanide	Plating baths
(147)	Solution containing sulfide	Plating baths
(15)	INORGANIC SOLIDS	
(151)	Inorganic solids	Activated carbon, cement, etc; foundry sand
(152)	Inorganic chemicals	Miscellaneous salts, etc; aged or off spec. chemicals including lime, caustic soda and partially containers of laboratory size
(16)	OTHER INORGANIC WASTES	
(161)	Asbestos-containing wastes	
*(162)	Aluminum or tin wastes	

*denotes waste stream deemed to be nonhazardous

UCD WASTE CATEGORY	DESCRIPTION
(165) Spent catalyst	Typically silica-alumina or zeolite, containing trace metals and carbonaceous deposits
(167) Unidentified inorganic wastes	
ORGANICS	
(21) SPENT SOLVENTS	
Halogenated Solvents	Contain chlorine (e.g. trichloroethylene), bromine, or fluorine
(211) Spent solvents with heavy metals	See (111) above. Methylene chloride 1,1,1 trichloroehylene used for metal cleaning
(212) Spent solvents with other metals	See (112) above. Surface cleaning and degreasing solvents
(213) Other halogenated solvents including mixed	Trichloroethylene, chloroform, carbon tetrachloride, etc; Freon and other solvents used in chemical processing
Non-Halogenated Solvents	Typically include oxygenates, e.g. acetone, methylethyl-ketone, varsol, etc.
(214) Spent solvents with heavy metals	See (111) above; toluene, benzene, xylene contaminated with catalysts
(215) Spent solvents with other metals or non-metals	See (112) above. Acetone, methylisobutylketone (MIBK) used in paint and varnish formulation
(216) Other non-halogenated solvents, including mixed	Solvents identified, and containing no metals
Unspecified Solvents	
(217) Unspecified solvents	Alcohols and mixtures of solvents; with no component

UCD WASTE CATEGORY		DESCRIPTION
(22) OTHER ORGANIC LIQUIDS		
(221)	Other organic liquids with halogens and metals	Dyes
(222)	Other organic liquids with halogens	Chlorine, bromine, fluorine only; chloroform, carbon tetrachloride
(223)	Other organic liquids with heavy metal only	See (111) above; nickel carbonyl, methyl mercury
(224)	Other organic liquids	Not classified as (221), (222), or (223); creosote and other polyaromatic hydrocarbons
(22) ORGANICS RESIDUES		Frequently include such contaminants as chloroform, acetone, trichloroethylene, etc. These solutions commonly result from cleaning and degreasing operations
(225)	Aqeous solution with non-halogenated organic residues 10%	Laboratory mixtures
(226)	Aqueous solution with halogenated organic residues 10%	Waste or rinse waters after degreasing
(227)	Aqueous solution with non-halogenated organic residues 10%	Laboratory mixture
(228)	Aqueous solution with halogenated organic residues 10%	Waste or rinse waters after degreasing
(23) ORGANIC SOLIDS		
(231)	Organic solids with halogens	Polyvinyl
(232)	Organic solids without halogens	Polyethylene
(24) OTHER ORGANIC WASTES		
(241)	Pesticides and wastes	Pesticide production, waste and rinse water containing pesticides, and pesticide containers not clearly specified as empty

UCD WASTE CATEGORY		DESCRIPTION
(242)	Polychlorinated biphenyls (PCBs) and material containing PCBs	Transformer fluids, contaminated materials including transformer carcasses and soil
(243)	Pharmaceuticals and wastes	
(244)	Photochemicals and wastes	Virtually all from photoprocessing laboratories
(245)	Off-specification or aged organics	Miscellanious; can include solids or liquid generally in containers
(247)	Halogenated still bottoms	
(248)	Still bottoms (distillation residues) without halogens	
(251)	Liquid tannery wastes	Many components including, aqueous chromate solutions, and organic materials such as fat and hide
(252)	Solid or sludge tannery wastes	
*(253)	Detergent and soap	Liquid, aqueous waste solutions, and organic solids from production or cleaning operations
(254)	Adhesives or glue	
(255)	Unspecified organic wastes	Organics not listed in above categories
(257)	Phenolic wastes	
(258)	Waste tars and residues	
(26)	POLYMERIC MATERIAL AND WASTES	
(261)	Polymeric resin	Phenolic, epoxy, polyester, urethane, etc., per component data
(262)	Latex and wastes	Paint, latex and acrylic resins
(263)	Other polymeric wastes, thermo-plastics, or not stated	Off-specification materials, crushed cases, discarded material from polymer reactors

*denotes waste streams deemed to be nonhazardous

UCD WASTE CATEGORY		DESCRIPTION
(264)	Other polymeric wastes, thermoset	Urea-formalydehyde and thermoset wastes
(27)	BIOLOGICAL WASTES	
*(271)	Sewage sludge	
(272)	Other biological wastes	Including animal fat, molasses wastes, dough, animal manure and animal carcass
(28)	OILY WASTES	
(281)	Waste oil and mixed oil	May contain solvents or metals, used automotive oil, cutting oil
(282)	Oil tank bottoms	
(283)	Oily mud or sediment and water	Crude oil tanker cleaning
(284)	Oily acidic solids	
(285)	Oily alkaline solids	
(286)	Oil/water separator sludge	
(288)	Oily wastes with heavy metal contaminants	
(289)	Oily wastes with water	Emulsions, cleanup water from garages, cooling waters
	OTHER SLUDGES	
(41)	Relatively Inert Sludges	
(412)	Filter cake	Contaminated filter material, e.g. diatomaceous earth
(413)	Gas scrubber sludge	From gas cleaning operations
(416)	Ink sludge	May contain solvents, lead, or chromium
(417)	Alum and gypsum (mineral) sludges	Waste water phosphate removal sludge

*denotes waste streams deemed to be nonhazardous.

UCD WASTE CATEGORY		DESCRIPTION
(43) METAL SLUDGE		
(431)	Heavy-metal sludge	Similar to 131, 141
(433)	Other metal sludges	Typically contain salts or iron, aluminum and/or alkali metals, such as ferrie chloride, aluminum oxide
(44) OTHER SLUDGES		
(441)	Lime sludge	From neutralization processes; may contain heavy metals, similar to (431)
(442)	Phosphate sludge	
(443)	Sulfur sludge	Includes sludge with high content of non-heavy metal sulfides
(444)	Cyanide bearing sludge	Pot liners from aluminum reduction and scrubber sludge from blast furnace
(445)	Plating or metal finishing sludge	See (131), (132), and (133); from treatment of metal contaminated solutions
(446)	Degreasing sludge	From cleaning of metal parts; contains solvents
(447)	Tetraethyl lead sludge	Tank bottom
(453)	Paper sludge/pulp	Paper and cardboard manufacture source
(454)	Paint sludge	Many possible components, including heavy metal (chromium) and organic solvents or components not stated
(455)	Paint sludge without heavy metals	Mostly latex
(456)	Other waste treatment sludge	Sludges not otherwise identified due to lack of composition data
(457)	Sludges with organic residues	Includes some halogenated components

UCD WASTE CATEGORY		DESCRIPTION
MISCELLANEOUS		
(509)	Gas cylinders or containers	Oxygen cylinders - empty
(510)	Flue-gas scrubber liquid	
*(511)	Rinse water and wastewater	Contains small units of oil, solvent, metals and/or mud; also bilge water
(512)	Spill clean-up	Includes miscellaneous organics, liquid fuels; oil/soil mixture
(513)	Laboratory waste chemicals (diverse)	
(514)	Contaminated soil and sand	
(515)	Drilling mud	
(518)	Dust-collector wastes	Typically dry lime from dust control baghouse
(519)	Fly ash and retort ash	Combustion-generated particulates, mineral matter plus some carbon
(521)	Spent cartridge filters	Gas/liquid cleaning
(523)	Tank bottom sediments	Some may contain flammable organics, composition typically ill-defined
(524)	Chemical toilet wastes	
(525)	Metal dust and machining wastes	Primarily ferrous and aluminum based alloys
(526)	Cannery wastes	
(527)	Mud/sediment and water	
(528)	Pathogenic Wastes	Tissue material from biopsies, autopsies and surgery; infectious wastes from contagion wards; bacterial culture
(530)	Contaminated pallets	
(531)	Contaminated rags	

*Denotes waste stream deemed to be nonhazardous

UCD WASTE CATEGORY		DESCRIPTION
Miscellaneous (cont'd)		
(532)	Equipment and/or containers contaminated with pesticide	Empty pesticide cans
(533)	Contaminated equipment and containers	Contaminants not stated
(535)	Totally unspecified wastes	Used only from California manifest purposes; totally unspecified wastes
(536)	Other**	Solvent containers, battery carcasses

**created by the author for this inventory study

APPENDIX II

TREATMENT/DISPOSAL CODES AND METHODS

Treatment/Disposal Code		Treatment/Disposal Method
On-Site	Off-Site	
001	101	recycle/recovery/reuse/ (e.g. dust control, fire training)
002	102	landfill
003	103	secure landfill (i.e., properly engineered landfill)
004	104	thermal destruction (e.g., autoclaving)
005	105	open burning
006	106	biological treatment (e.g., lagoon)
007	107	physical/chemical treatment
008	108	sewer
-	109	contractor (method used not known)
010	110	waste exchange program
011	111	other (e.g., held in storage room)

- The first digits, 0 and 1 are indicative of on-site and off-site, respectively.

- "On-site" means on the same or geographically contiguous property which may be divided by public or private right(s)-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along, the right(s)-of-way. Non-Contiguous properties owned by the same person, but connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

APPENDIX III

EXISTING QUANTITIES OF PCBs

HELD AT DND BASES IN THE PRAIRIE PROVINCES

Base Location	PCBs, kg
Alberta	
CFB Cold Lake	706
CFS Beaverlodge	negligible
CFB Edmonton	150
CFS Penhold	5,495
CFB Suffield	Nil
Manitoba	
CFS Gypsumville	5,661
CFB Shilo	32
CFB Winnipeg	1,345
CFB Beausejour	3,521
CFB Portage	104
Saskatchewan	
CFS Yorkton	2,927
CFS Dana	20,149
CFB Moose Jaw	374
CFS Alsask	5,643
Total	46,107

APPENDIX IV

GEOGRAPHICAL DISTRIBUTION OF NON-MILITARY FEDERAL FACILITIES MAIL-SURVEYED, 1985

	Alta	Man.	Sask.	Total
No. of facilities mail-surveyed	23	21	15	59
No. of responses	21	17*	12*	50

* EPS Lab in Winnipeg, which is no longer in operation, and Grasslands National Park in Saskatchewan reported "zero" hazardous waste generation.

APPENDIX V

QUESTIONNAIRE

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCO Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal

APPENDIX VI

INVENTORY OF HAZARDOUS WASTE GENERATION AT FEDERAL FACILITIES IN THE PRAIRIE PROVINCES

Facility — Page

Alberta

1. Agriculture Canada

1.1 Beaverlodge Research Station, Beaverlodge.....37

1.2 Lacombe Research Station, Lacombe.....38

1.3 Lethbridge Research Station, Lethbridge.....39

2. Environment Canada

2.1 Canadian Wildlife Service
Northern Research Centre, Edmonton.....40

2.2 Canadian Wildlife Service
Peregrine Facilities, Wainwright.....41

2.3 Environmental Protection Service
EPS Laboratory, Edmonton.....42

3. Health and Welfare Canada

3.1 Goodfish Lake Health Center, Goodfish Lake.....43

3.2 Hobbema Health Center, Hobbema.....44

3.3* Saddle Lake Health Center, St. Paul.....45

4.* National Defence

4.1 CFS, Beaverlodge.....46

4.2 CFB, Calgary.....47

*data directly translated from the 1982 completed questionnaires

Facility — Page

Alberta, Continued

4.* National Defence, (Con'd)

4.3 CFB, Camp Wainwright, Wainwright.....48

4.4 CFB, Cold Lake.....49

4.5 CFB, Edmonton.....50

4.6 CFS, Penhold.....51

4.7 CFB, Suffield.....52

5. Parks Canada

5.1 Banff National Park.....53

5.2 Elk Island National Park.....54

5.3 Jasper National Park.....55

5.4 Waterton National Park.....56

6. Solicitor General

6.1 Bowden Institution.....57

6.2 Drumheller Institution.....58

7. Transport Canada

7.1 Calgary International Airport.....59

7.2 Edmonton International Airport.....60

7.3 Grande Prairie Airport.....61

7.4 Lethbridge Airport.....62

*data directly translated from the 1982 completed questionnaires.

Facility Page

Alberta, Continued

7. Transport Canada, (Con'd)

7.5* Peace River Airport.....63

7.6 Springbank Airport.....64

7.7 Villeneuve Airport.....65

8. Public Works Canada
8.1 G.O.C.B. Calgary.....66

Manitoba

9. Agriculture Canada

9.1 Animal Pathology Lab, Winnipeg.....67

9.2 Brandon Research Station, Brandon.....68

9.3 Grain Research Lab, Winnipeg.....69

9.4 Seed Lab, Winnipeg.....70

9.5 Winnipeg Research Station.....71

9.6 Morden Research Station, Morden.....72

9.7 Special Crops-Substation, Portage La Prairie.....73

10. Health and Welfare Canada

10.1 Norway House Hospital.....74

11. Royal Canadian Mounted Police

11.1 RCMP Forensic Lab, Winnipeg.....75

12. Solicitor General

12.1 Stony Mountain Institution, Winnipeg.....76

*data directly translated from the 1982 completed questionnaires.

Facility Page

Manitoba, Continued

13. Transport Canada

13.1 Churchill Airport.....77

13.2 Dauphin Airport.....78

13.3 Lynn Lake Airport.....79

13.4*St. Andrew's Airport, Winnipeg.....80

13.5*The Pas Airport.....81

13.6 Thompson Airport.....82

13.7*Winnipeg Airport.....83

14. National Defence

14.1 CFS, Beausejour.....84

14.2 CFS, Gypsumville.....85

14.3 CFB, Portage La Prairie.....86

14.4 CFB, Shilo.....87

14.5 CFB, Winnipeg.....88

15. Ports Canada, Port of Churchill.....89

16. Royal Canadian Mint, Winnipeg.....90

Saskatchewan

17. Agriculture Canada

17.1 Experimental Farm, Indian Head.....91

17.2 Melfort Research Station.....92

*data directly translated from the 1982 completed questionnaires.

Facility — Page

Saskatchewan, Continued

17. Agriculture Canada (Con'd)

17.3 Regina Research Station.....93

17.4 Swift Current Research Station.....94

17.5 Animal Pathology Lab, Saskatoon.....96

18. Environment Canada

18.1 Inland Waters Directorate
Water Quality Branch - Field Lab, Regina.....98

19. National Research Council

19.1 Plant Biotechnology Institute, Saskatchewan.....99

20.* National Defence

20.1 CFS, Alsask.....100

20.2 CFS, Dana, Sagehill.....101

20.3 CFB, Det Dundurn.....102

20.4 CFB, Moose Jaw.....103

20.5 CFS, Yorkton.....107

21. Solicitor General

21.1 Saskatchewan Penitentiary, Prince Albert.....108

22. Transport Canada

22.1 Regina Airport.....109

22.2 Saskatoon Airport.....110

22.3 Yorkton Airport.....111

*data directly translated from the 1982 completed questionnaires.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
1.1	AGRICULTURE CANADA Beaverlodge Research Station, Alberta	52	281 waste engine oil	-	400 L/yr.	001, dust control
			217 unspecified spent organic solvents	-	115 L/yr.	008, sewer
			536 solvent containers	-	5 kg/yr. (five 5-gal.containers/yr.)	102, landfill
			513 lab waste chemicals	9 45-gal.drums accumulated for 5 years	unknown	011, storage room
			513 organic lab waste chemicals	-	100 kg/yr.	006, lagoon
			532 pesticide containers	-	36 kg (36 5-gal.containers/yr.)	102, landfill
			528 pathogenic wastes (syringes, needles, pipets)	-	82 kg/yr.	104, incineration
				TOTAL:	738 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
1.2	AGRICULTURE CANADA Lacombe Research Station Alberta	88	272 beef carcass	-	4 metric tons/year	002, burial pit 004, incinerator (calves)
			hog carcass	-	2 metric tons/year	002, burial pit (adult) 004, incinerator (piglet)
			solid manure	-	6750 metric tons/year	006, land spreading
			liquid manure	-	270 metric tons/year	006, land spreading
			528 bacterial cultures (pathogenic wastes)	-	200 kg/year	004, autoclave
			216 toluene, aceton, propanol P. ether	-	140 L/year	008, sink drain
			241 pesticides	-	small amount	011, ground pit 002, landfill
			532 pesticide containers	-	10 kg/year (100 containers/year)	002, conuty collection depot or landfill
			281 waste oil	-	1200 L/year	001, used to lubricate gutter chain at hog barns
			536 oil containers	-	120 kg/year (1200 containers/year)	002, landfill
			513 surplus chemical	nil	50 kg/year	011, storage room

TOTAL: 14,740 kg/year

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
1.3	AGRICULTURE CANADA Lethbridge Research Station Lethbridge, Alberta	325	111 heavy metals, acids	-	20 L/yr.	110, commercial disposal
			214 Varsol	-	818 L/yr.	011, mixed with waste water oil, 500-gal. tank
			217 solvent	-	150 L/yr.	007, evaporation or burning
			241 experimental pesticides	-	10 kg/yr.	109, contractor
			241 surplus pesticides	100 kg (1984)	30 kg/yr.	101, return to companies
			272 animal manure and bedding	-	5,000,000 kg/yr.	106, land spreading
			272 cow carcasses	-	2,000 kg/yr. (4/yr.)	101, local rendering plant
			272 sheep carcasses	-	750 kg/yr. (15/yr.)	101, local rendering plant
			281 waste motor oil	-	4,540 L/yr.	101, spread on gravel roads for dust control
			532 pesticide containers	-	2 kg/yr. (25 - 1L/yr.)	102, landfill
			532 pesticide containers	-	10 kg/yr. (50 - 4L/yr.)	102, landfill
				TOTAL:	5,008,330 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
2.1 ENVIRONMENT CANADA Canadian Wildlife Service Northern Forest Research Center Edmonton, Alberta	-	113 acids	-	20 L/yr.	008, drain
		217 alcohols	-	30 L/yr.	008, drain
		217 acetone	-	1 L/yr.	008, drain
		217 xylene and petroleum ether	-	2 L/yr.	104, incineration
		221 dyes	-	0.05 kg/yr.	008, drain
		224 formaldehyde	-	15 L/yr.	104, incineration
		272 wildlife specimen and fecal material	-	100 kg/yr. 100 kg/yr.	104, incineration 102, landfill
		513 surplus chemicals	0 kg	0.5 kg/yr.	104, incineration
			TOTAL:	269 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
2.2	ENVIRONMENT CANADA Canadian Wildlife Service Peregrine Facilities Wainwright, Alberta	-	272 quail manure	-	1,560 kg/yr. (3 bags/week)	102, landfill
				TOTAL:	1,560 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
2.3	ENVIRONMENT CANADA EPS Laboratory Edmonton, Alberta	10	213 halogentated solvent	10 L	197 L/yr.	104, U of A incinerator
			216 non-halogenated solvent	10 L	396 L/yr.	104, U of A incinerator
			513 lab surplus chemical	-	10 kg/yr.	104, U of A incinerator
			528 bacterial culture	-	1,000 kg/yr.	104, autoclaving and municipal dump
			536 waste bottles	10 bottles	20 kg/yr. (200 bottles)	104 U of A incinerator
				TOTAL:	1,632 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
3.1	HEALTH AND WELFARE CANADA Goodfish Lake Health Center Goodfish Lake, Alberta	-	243 outdated vaccine	-	small amount	111, return to hospital pharmacy
			528 needles and syringes	-	8 kg/yr.	005, open burning
				TOTAL:	8 kg/year	

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
3.2	HEALTH AND WELFARE CANADA Hobbema Health Center Alberta	...	528 Syringes and needles	-	1 kg/yr.	004, incineration
			243 Pharmaceuticals	-	small amount (20 vials/yr.)	004, incineration
			536 Empty paint containers and solvent containers	-	small amount (2 or 3 cans/yr.)	102, landfill
			TOTAL	1	kg/year	

INVENTORY OF HAZARDOU. ASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PR.. INCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
3.3	HEALTH AND WELFARE CANADA Saddle Lake Health Center St. Paul, Alberta	...	528 Used syringes and needles	-	1 kg/yr.	104, incineration
			243 Vaccine	-	1 kg/yr. (15-30 vials/yr.)	104, incineration
			144 X-ray developing and fixing solutions	-	7 L/yr.	008, sewer
			509 Oxygen cylinder	-	100 kg/yr. (2 cylinders/yr.)	101, re-use

TOTAL: 109 kg/year

Note that the health center did not respond to the survey of 1985, and the above data are directly translated from the 1982 completed questionnaire.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.1	CFS, Beaverlodge Beaverlodge, Alberta	156	214 Varsol	-	182 L /yr.	001, fire training
			243 expired pharmaceuticals	-	unknown	111, shipped to RMED Calgary
			281 waste oil	-	900 L /yr.	001, fire training
			532 pesticide containers	-	unknown	109, garbage contractor
				TOTAL:	1,082 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.2	CFB, Calgary Calgary, Alberta	930	111 battery acid	-	400 L/yr.	111, return with carcasses to CADC
			144 x-ray fiber & developer	-	118 L/yr.	109, contractor
			213 para-chlorophenol	-	18 L/yr.	008, sewer
			243 expired pharmaceuticals	-	18 kg/yr.	008, sewer
			281* waste oil (mixed with spent solvents)	-	3,633 L/yr.	101, recycled by Hub Oil, 1985
			281 ethylene glycol-antifreeze	-	204 L/yr.	008, sewer
			536 scrap battery	-	4,000 kg/yr.	101, return to CADC
				TOTAL:	8,391 kg/year	

* There are 3 or 4 underground storage tanks for collecting waste oil mixed with solvents.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.3	CFB, Camp Wainwright Wainwright, Alberta	-	MEN's MESS HALL:			
			281 deep fryer oil	-	2,044 L/yr.	002, landfill
			MAINTENANCE SECTION:			
			111 battery acid	-	400 L/yr.	008, diluted and discharged into sewer
			215 acetone, paint thinner	-	454 L/yr.	001, fire training
			217 solvents	-	1,817 L/yr.	001, fire training
			261 used tires	-	2,000 kg/yr. (200/yr.)	101, salvage contractor
			281 contaminated fuel	-	908 L/yr.	001, fire training
			281 oil, grease	-	22,710 *L/yr.	101, kept in underground tank and recycled by contractor
			536 battery carcasses	-	4,000 kg/yr. (200/yr.)	101, contractor
				TOTAL:	34,333 kg/year	

* Data (1984) provided by Hub Oil

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.4	C.F.B. Cold Lake Alberta	1659	281* waste fuel, oil	-	179,256 L/yr.	005, open burning
			215 Varsol	-	12,370 L/yr.	005, open burning
			217 paint thinner	-	340 L/yr.	005, open burning
			216 Varsol, turpentine, thinner-mixture		1,017 L/yr.	005, open burning
			262 paint	-	76 L/yr.	102, landfill
			244 developer*	-	13,122 L/yr.	008, sewer
			241 pesticides	159 L	-	011, storage
			272 vaccines	-	205 kg/yr.	002, landfill
			243 pharmaceuticals and waste	-	115 kg/yr.	004, incineration
			111 battery acid	-	454 kg/yr.	007, neutralization
			161 asbestos	-	unknown	102, landfill
			528 needles and syringes	-	45 kg/yr.	004, incineration
			244 fix**	320L	unknown	007, silver recovered

TOTAL: 207,000 kg/year

*developer: hydroquinone, elon, Na_2CO_3, Na_2SO_3, KBr, K_2AlSO_4, NaCN, KI, quadrofos, benzylalcohol, NaOH, citrazinic etc.

**fix: dilution solution, containing $Na_2S_2O_3$, Na_2PO_4, $NaHSO_4$.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD	Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.5	CFB, Edmonton Edmonton, Alberta		111	battery acid	-	850 L/yr.	007, neutralized with baking soda and drained into sink
			152	surplus chemicals - nitrite, sludge conditioner, disodium phosphate, sodium sulphite, morfoline	1,682 kg	unknown	011, awaiting disposal instructions
			161	asbestos	-	454 kg/yr.	102, Edmonton landfill
			211	perchloroethylene	-	3 L/yr.	102, city landfill
			217	spent catalyst and paint and paint remover mixture	-	910 L/yr.	102, city landfill
			224	tricresyl phosphate (vacuum pump oil)	-	4.5 L/yr.	102, Edmonton or Sturgeon landfill
			241	Pyrethrin (pesticide) expired	-	9 L/yr.	011, awaiting disposal instructions
			144	x-ray developer and fixer	-	230 L/yr.	008, drained into lab sink
			244	photographic and developer	466 L	unknown	011
			281	waste oil	-	81,720 L/yr.	101, recycle
			281	contaminated aviation fuel	-	2,270 L/yr.	109, contractor or 001, fire training
			528	infectious waste	-	455 kg/yr.	007, 102, sterilized and disposed of at Edmonton or Sturgeon landfill
			532	pesticide containers	-	2 kg/yr. (20 - 4.5 L/yr.)	011, awaiting disposal instructions
			536	scrap battery	-	5,090 kg/yr.	101, CADC contract
			243	expired pharmaceuticals	-	41.4 kg/yr.	104, Charles Camsell Hospital incinerator
					TOTAL:	91,585 kg/year	

Note: asbestos: tagged in plastic bags and disposed of at Edmonton landfill.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.6	CFB, Penhold Mynarsk Park, Alberta	284	215 Varsol	-	11,350 L/yr.	101, recycled; semi-annual pickup
			243 pharmaceuticals	-	5 kg/yr.	111, return to medical depot
			144* X-ray developer and fixer		55 L/yr.	008, drain to sewer
			281 used motor and air compressor oil	-	1,620 L/yr.	101, recycled; semi-annual pickup
			532 pesticide containers (Baygon, MCPA amine)	-	10 kg/yr. (270 liters of each used/yr.	111, sent to pesticide collection site
				TOTAL:	25,040 kg/year	

*developer: dilute solution, containing Br, I, Na_2SO_3, KBr, Na_2CO_3.

fixer: dilute solution, containing $Na_2S_2O_3$, CH_3COOH, $KAlSO_4$

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
4.7	CFB, Suffield Alberta	359	215, acetone, toluene	-	1290 L/yr.	001, fire training
			213, chloroform	-	50 L/yr.	011, unknown
			217, petroleum solvents	-	1050 L/yr.	109, contractor
			281, ethylene glycol	-	400 L/yr.	109, contractor
			216, cleaning solvents, thinners	-	376 L/yr.	008, sewer
			262, paints - latex and oil based	-	340 L/yr.	008, sewer
			241, organophosphate-pesticides	-	230 L/yr.	002, landfill
			281, gear oil and cooling oil	-	136 L/yr.	002, landfill
			281, oil changes in diesel and gasoline engines	-	68 L/yr.	002, landfill
			281, waste oil and fuel	-	5450 L/yr.	001, fire training
			281, antifreeze oil, lubricating oil and various oils	-	90,840* L/yr.	101, contractor
			244, photochemicals	-	1890 L/yr.	008, municipal sewage system
			161, asbestos	-	4 kg/yr.	002, open dump
			167, nickel, cadmium scrap batteries	-	0.6 kg/yr (6 per year)	002, open dump
					TOTAL: 102,125 kg/year	

*Data(1984) provided by Hub Oil

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
5.1	PARKS CANADA Banff National Park Banff, Alberta	-	217 spent solvents	-	180 L/yr.	102, Calgary landfill
			272 animal carcasses	-	50,000 kg/yr. (200/yr)	011, sent to animal lab 111, sent to processing plant*
			272 manure	-	12,000 kg/yr.	002, landfill
			281 lubricating oil	-	15,900 L/yr.	101, recycling
			536 battery carcasses	-	3,000 kg/yr. (150/yr.)	101, recycling
				TOTAL:	81,080 kg/year	

*for converting to fertilizer

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
5.2	PARKS CANADA Elk Island National Park Fort Saskatchewan, Alberta	27	272 * intestines, heads (150 animals/yr.	-	3,000 kg/yr.	005, burned 002, buried
			217 spent solvents	-	409 L/yr.	005, burned
			281 transmission oil and crankcase oil	-	9,084 L/yr.	005, burned
				TOTAL	12,493 kg/year	

* 1,500 kg/yr. assigned to 005; 1,500 kg/yr. to 002.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
5.3	PARKS CANADA Jasper National Park Jasper, Alberta	190	111 battery acid	-	240 L/yr.	002, buried with batteries
			272 dead animals	-	3,000 kg/yr. (150/year)	002, landfill
			281 waste oil	-	2,000 L/yr.	101, re-refining; Edmonton
			536 battery carcasses	-	600 kg/yr. (30/year)	002, landfill
				TOTAL:	5,840 kg/year	

	Facility	Number of Employees	UCD	Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
5.4	PARKS CANADA Waterton National Park Waterton, Alberta	44	111	battery acid	-	23 L/yr.	007, neutralization
			215	Varsol and paint thinner	-	200 L/yr.	005, burning
			272	manure and dead animals	-	500 kg/yr. (5-10 carcasses)	002, landfill
			281*	transmission oil, engine oil, hydraulic oil	-	2,270 L/yr.	005, burning; no recycling available; contaminated with water and other fluid
			532	roundup containers	-	0.2 kg/yr. (10-2 gal.cans/yr.)	002, landfill
					TOTAL:	2,993 kg/year	

* The regional landfill will accept used oil from August 1st, 1985.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
6.1	SOLICITOR GENERAL Bowden Institution Alberta	300	532 pesticide containers	-	20 kg/yr. (25 - 5 gal.containers)	109, returned to supplier
			215 spent Varsol	-	1,136 L/yr.	109, stored in drums for disposal through suppliers
			281 transmission oil and motor oil	-	2,271 L/yr.	109, " " "
			145 brine solution	-	16,800 L/yr.	108, sewer
				TOTAL:	20,227 kg/year	

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
6.2	SOLICITOR GENERAL Drumheller Institution Drumheller, Alberta	323	241 DDT	1 kg	-	011, stored in the armouries
			241 Killex (herbicide)	-	small amount	004, incineration
			281 waste oil	-	5,450 L/yr.	101, recycling
			532 pesticide containers	-	0.2 kg/yr. (2/yr.)	102, landfilling
				TOTAL:	5,450 kg/year	

Incinerator: Joseph Goder; Model 450-SSN-SP
design capacity 1.2×10^6 BTU/hr; multiple chamber
1st chamber 3000°F; 2nd chamber 3000°F
air pollution control: screen (?)

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.1	TRANSPORT CANADA Calgary Airport Calgary, Alberta	120	281 used engine, transmission and hydraulic oil	-	15,226 L/yr.	101, sold for recycle (spills sent to 103)
			289 aircraft deicing fluid (ethylene glycol)	-	350,000 L/yr.	103, collected by contractor and sent to 103
			532 empty pesticide containers:			
			Tordon 101 (weed control)	-	25.6 kg/yr. (128 - 20 L/yr.)	103
			Tordon 22 K (weed control)	-	0.2 kg/yr. (1 - 20 L/yr.)	103
			Gopher Cop. (rodenticide)	-	23 kg/yr (468 - 250 cc/yr.)	103
			Simazine (weed control)	-	0.6 kg/yr. (6 - 2 kg/yr.)	103
				TOTAL:	365,275 kg/year	

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.2	TRANSPORT CANADA Edmonton International Airport Edmonton, Alberta	550	214 Varsol	-	2,000 L/yr.	109, contractor
			281 waste oil	-	3,000 L/yr.	109, contractor
			289 oily wastes (equipment cleaning)	-	90,000 L/yr.	008, storm drain
			532 pesticide containers	-	20 kg/yr. (200 containers/yr.)	102, (Leduc)
				TOTAL:	95,020 kg/year	

NOTE: Airport reported about 900 kg/yr. powedered "truck wash" detergent is used for equipment cleaning, producing 90,000 L/yr. of oily wastes with water.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.3	TRANSPORT CANADA Grande Prairie Airport Grande Praire, Alberta	-	215 Varsol	-	204 L/yr.	101, contractor for recycle
			216 thinner	-	23 L/yr.	101, contractor for recycle
			281 transmission oil	-	202 L/yr.	101, recycle
			281 crankcase oil	-	900 L/yr.	101, recycle
			454 paint sludge	-	18 L/yr.	109, contractor
			521 used oil/fuel filters	-	4 kg/yr. (48/yr.)	109, contractor
			531 contaminated rags	-	25 kg/yr.	109, contractor
			536 battery carcasses	-	360 kg/yr. (18/yr.)	101, recycle
			536 empty paint cans (20 L)	-	5 kg/yr. (40-50/yr.)	109, contractor
				TOTAL:	1,741 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.4	TRANSPORT CANADA Lethbridge Airport Lethbridge, Alberta	18	217 spent solvent	-	205 L /yr.	001, fire training, dust control
			241 Calmix (for weed control)	-	5 kg/yr.	005, burning
			281 vehicle waste oil	-	1,400 L /yr.	001, fire training, dust control
			536 empty solvent containers	-	10 kg/yr. (1 - 205 L container)	101, returned to supplier
			532 empty pesticide containers		1 kg/yr. (3 containers/yr)	109, picked up by supplier
			536 battery carcasses	-	60 kg/yr.	101, salvage dealer
				TOTAL:	1,681 kg/ year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.5	TRANSPORT CANADA Peace River Airport Alberta	–	216 varsol and thinner	-	136 L/yr.	005, burning
			281 hydraulic oil	-	136 L/yr.	109, contractor
			281 engine oil	-	227 L/yr	109, contractor
				TOTAL:	499 kg/year	

Note: data translated from the 1982 completed questionnaire.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.6	TRANSPORT CANADA Springbank Airport Alberta	-	215 spent Varsol	-	410 L/yr.	101, recycling
			281 engine oil, hydraulic fluid	-	10,900 L/yr.	101, recycling
			532 pesticide containers	-	1 kg/yr. (6 - 10 L containers/yr.)	103, landfill
			536 solvent containers	-	10 kg/yr. (2 - 205 L drums)	101, supplier
			536 paint pails	-	9 kg (45 pails/yr.)	103, landfill
			536 battery carcasses	-	120 kg/yr. (6/yr.)	101, recycling
				TOTAL:	11,450 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
7.7	TRANSPORT CANADA Villeneuve Airport St. Albert, Alberta	9	532 pesticide containers	-	0.3 kg/yr. (3 metal tins)	102, landfill
			214 spent Varsol	-	410 L/yr.	005, burning
			thinner	-	45 L/yr.	005, burning
			536 empty solvent containers	-	unknown	102, landfill
			281 used crank case oil, transmission oil, gear oil, etc.	2000	3000 L/yr.	007, oil separator 109, contractor
			536 empty waste solvent containers	-	unknown	101, drums are returned to supplier when empty
			262 waste paint	-	5 L/yr.	102, landfill
			289 cooling water	-	23 L/yr.	108, sewer/lagoon
			289 oily wastes	N/A	N/A	007, oil separator 109, contractor
			536 battery cases	120 kg	120 kg/yr.	109, contractor
				TOTAL	3,603 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
8.1	D.P.W., G.O.C.B., CALGARY Alberta		272 Fish	-	50 kg/yr.	102, landfill
			528 Needles	-	50 kg/yr.	102, landfill
			513 Soil and test chemicals	-	500 kg/yr.	102, landfill
			281 Equipment oil	-	158 L/yr.	109, contractor
			281 Kitchen oil	-	158 L/yr.	102, landfill

TOTAL: 916 kg/year

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.1	AGRICULTURE CANADA Animal Pathology Lab Winnipeg, Manitoba	9	528 bacterial culture	-	300 kg/yr.	004, autoclaving
			113 acidic solution	-	2 L/yr.	008, sewer
			217 alcohols (ethyl, methyl, iso-amyl)	-	10 L/yr.	008, sewer
			257 phenol based disinfectant	-	60 L/yr.	008, sewer
			528 outdated antibiotic solutions	-	4 L/yr.	008, sewer
				TOTAL:	376 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.2	AGRICULTURE CANADA Brandon Research Station Brandon, Manitoba	69	113 10% H_2SO_4	-	100 L/yr.	008, dilution & to sewer
			113 10% (F/3) $HNO_3/HClO_4$	-	20 L/yr.	008, dilution & to sewer
			123 0.5 M $NaHCO_3$	-	50 L/yr.	008, dilution & to sewer
			211 melhytine chloride	-	2 L/yr.	008, dilution & to sewer
			216 spent solvents - nonhalogenated	-	40 L/yr.	004, incineration
			216 spent ether	-	8 L/yr.	007, evaporation
			227 alcohol solutions	-	45 L/yr.	008, dilution & to sewer
			241 pesticide (waste)	-	25 L/yr.	111, drum container shipped to Gimli
			272 liquid manure (beef)	-	1,362,600 L/yr.	006, applied to land
			272 liquid manure (swine)	-	1,350,000 L/yr.	006, applied to land
			281 waste oil	-	2,250 L/yr.	006, applied to roads
			532 herbicide & pesticide cans	-	10 kg/yr. (100 pails)	103, city disposal sites
				TOTAL:	2,715,150 kg/year	

The station also reported: UCD 253 detergent & soap, 4 kg/yr., 008 dilution & to sewer

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.3	AGRICULTURE CANADA Grain Research Lab. Winnipeg, Manitoba	92	111 chromic acid, sulphuric acid	-	1 L/yr.	008, dilution and down the drain
			244 photochemicals and wastes	-	250 L/yr.	008, " " " " "
			213 chloroform	-	90 L/yr.	011, evaporation; drain to holding tank
			213 dichloromethane, Freon	-	17 L/yr.	011, drain to holding tank
			216 spent solvent	-	576 L/yr.	011, drain to holding tank and evaporation
			216 spent solvent	-	569 L/yr.	008, sewer
			217 5% ammonium thiocyanate/ isopropanol	-	12 L/yr.	011, drain to holding tank and evaporation
			217 alcohols	-	27 L/yr.	008, dilution and down the drain
			232 polyacrylamide (solid)	-	6 kg/yr.	111, garbage
			281 chloroform/oil mixture	-	8 L/yr.	011, drain to holding tank
			281 vacuum pump oil	-	4 L/yr.	011, drain to holding tank
			536 empty solvent containers	-	3 kg/yr.	102, garbage
				TOTAL:	1,563 kg/year	

NOTE:- In most cases the term "dilution and down the drain" refers to glass-lined drains that lead to a three-stage dilution tank and then to the sewer.

- The term "drain to holding tank" refers to drains that lead to a solvent holding tank where the solvents are removed by evaporation or by a contractor, if needed.
- Garbage: disposed of either in a city landfill or in a city incinerator
- There are two underground holding tanks.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.4	AGRICULTURE CANADA Seeds Lab. Winnipeg, Manitoba	13	241 fungicide-treated seeds	200-300 kg	200 kg/yr.	102, landfill
				TOTAL:	200 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.5	AGRICULTURE CANADA Winnipeg Research Station Winnipeg, Manitoba	-	FARM OPERATION			
			532 empty herbicide containers	-	0.6 kg (6/yr.)	103, triple-rinsed and disposed of in landfill site
			262 Latex paint	-	3 L/yr.	102, 103, landfill
			281 waste oil & mixed oil	50 L	200 L/yr.	001, dust control on gravel road
			521 spent cartridge filters	-	1 kg/yr. (10/yr.)	102, 103, landfill
			531 contaminated rags	-	10 kg/yr. (100/yr.)	102, landfill
			532 empty pesticide containers	-	0.4 kg/yr. (2/yr.)	103, landfill
			536 battery	120 kg	160 kg/yr. (8/yr.)	101, trade in for credit on new batteries
			MAINTENANCE OPERATION			
			281 waste & mixed oil	140 L	150 L/yr.	001, dust control on gravel road
			RESEARCH OPERATIONS			
			213 halogenated solvents including mixed	-	140 L/yr.	011, unknown
			216 spent solvent - non-halogenated	-	>34 L/yr.	011, unknown
			217 alcohol and solvent	-	80 L/yr.	011, unknown
			241 pesticide (including malathion)	-	2.4 L/yr.	011, unknown
			241 fungicide-treated seed	-	1.5 kg/yr.	102, buried at Glenlea
			272 biological waste	-	5.5 kg/yr	011, unknown
			513 waste laboratory chemical	-	237 L/yr.	011, unknown
			532 empty pesticide containers	-	1 kg/yr. (11 - 13 cans/yr.)	011, unknown
				TOTAL:	1,027 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.6	AGRICULTURE CANADA Morden Research Station Morden, Manitoba	48	152 inorganic chemicals - off spec.	100 kg	unknown	011, in storage
			216 used solvents, Varsol	0	180 L/yr.	008, sewer
			241 rise water, pesticide	0	1,000 L/yr.	011, soil application, open drain on Station property
			244 photochemical and wastes	0	184 L/yr.	008, dilution and sewer
			281 used automotive oil, solvents	20 L	650 L/yr.	001, dust control on road
			521 oil & fuel cartridges	-	10 kg/yr. (100 / yr.)	105, local nuisance ground, burned
			532 pesticide containers (metal)	0	4 kg/yr. (40 / yr.)	111, prov.govt. pesticide container disposal
			532 pesticide containers (plastic)	0	15 kg/yr. (150 / yr.)	005, rinsed, burned on site
				TOTAL:	2,043 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
9.7	AGRICULTURE CANADA Special Crops - Substation Portage La Prairie, Manitoba	4	532 empty pesticide cans	-	0.2 kg/yr. (2 cans/yr.)	111, held in storage at Ag.Canada Research Station, Morden, Manitoba
				TOTAL:	0.2 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
10.1	HEALTH & WELFARE CANADA Norway House Hospital Norway House, Manitoba	48	215 paint brush cleaners	-	40 L/yr.	005, open burning
			272 biological waste - blood	-	800 kg/yr.	004, incineration
			281 lubricating oil	8 L	64 L/yr.	005, open burning
			532 pesticide containers	-	0.5 kg/yr. (4 1 lb./yr.)	005, open burning
			528 pathogenic wastes (microbiology)	-	200 kg/yr.	004, incineration
			536 battery carcasses	-	40 kg/yr. (2/yr.)	102, landfill
				TOTAL:	1,145 kg/year	

Incinerator: design capacity 18,500 BTU/hr;
single chamber.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
11.1	R.C.M.P. FORENSIC LAB Winnipeg, Manitoba	28 (50)*	111 chromic acid	-	3 L/yr.	007, neutralization (008, dilution, sewer)
			213 chloroform, n-butylchloride	-	162 (324) L/yr.	007, evaporation
			214 toluene, benzene	-	6 (12) L/yr.	007, evaporation
			216 ether, acetone, ethyl acetate	-	79 (158) L/yr.	007, evaporation
			216 acetonitrile	-	100 (200) L/yr.	007, chemical conversion (008, dulution, sewer)
			217 ethanol, methanol n-butanol	-	71 (142) L/yr.	008, dilution, sewer
			231 organic solid, polyvinyl containers	-	7 (14) kg/yr.	109, garbage
			232 polyacrylamide	-	0.25 (0.5) kg/yr.	109, garbage
			244 photochemicals and wastes	-	410 (820) L/yr.	008, sewer
			528 biological waste	-	150 (300) kg/yr.	101, incineration
			556 solvent containers	-	6 (15) kg/yr.	109, garbage
				TOTAL:	994 kg/year	

* estimate for 1990

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
12.1	SOLICITOR GENERAL Stony Mountain Institution Winnipeg, Manitoba	35				
		- Works and Engineering	111 battery acid	-	4 L/yr.	008, drain (sewer)
			281 lubricating oil	-	545 L/yr.	109, contractor
			454 paint sludge	-	1,230 L/yr.	109, contractor
			536 battery carcasses	-	120 kg/yr. (6/yr.)	102, landfill
		- Industrial paint	113 metal prep - 79	-	112 L/yr.	008, dilution & drain
			214 toluol, Varsol	-	1,000 L/yr.	008, dilution & drain
			454 paint sludge	-	1,000 L/yr.	102, landfill
			531 contaminated rags	-	150 kg/yr.	102, landfill
			536 solvent containers	-	30 kg/yr. (300 - 4 L/yr.)	109, supplier
		- Metal Products	289 cutting oil & water	-	75 L/yr.	008, dilute and drain (sewer)
			525 metal dust, grinding	-	200 L/yr.	102, landfill
			536 cutting oil containers	-	2 kg/yr. (20 - 4L/yr.)	109, contractor
		- Auto Areas	281 waste oil and mixed oil	-	454 L/yr.	109, kept in underground tank and removed by contractor
				TOTAL:	4,922 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.1 TRANSPORT CANADA Churchill Airport Manitoba	-	281 Lubricating oil	-	2280 L/yr.	102, Landfill
		216 Varsol	-	408 L/yr	102, Landfill
		536 Battery Carcasses	-	... kg/yr (... batteries/yr.)	102, Landfill
			TOTAL:	2,688 kg/year	

Note:-Data was translated from the 1982 completed questionnaire.

-Airport did not want to verify or update the above data.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.2	TRANSPORT CANADA Dauphin Airport Dauphin, Manitoba	6	217 solvent	-	204 L /yr.	109, town removes it; usage not known
			281 lubricating oil	-	612 L /yr.	109, town removes it; usage not known
				TOTAL:	816 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.3 TRANSPORT CANADA Lynn Lake Airport Manitoba	5	281 lubricating oil	-	612 L/yr.	005, burning
		216 Varsol	-	408 L/yr.	005, burning
		111 battery acid	-	12 L/yr.	102, landfill
		536 battery cases	-	120 kg/yr.	102, local landfill
		262 paint cans	-	2 kg/yr. (15 each yr.)	102, local landfill
		289 garage clean-up steaming	-	400 L/yr.	102, local landfill
			TOTAL:	1,554 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.4	TRANSPORT CANADA St. Andrew's Airport Winnipeg, Manitoba	-	217 spent solvent	-	204 L/yr.	109, picked up by municipality
			281 lubricating oil	-	612 L/yr.	109, picked up by municipality
				TOTAL:	816 L/year	

NOTE:- The airport did not respond to the mail survey of 1985.

- The above data were translated from the 1982 completed questionnaire.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.5	TRANSPORT CANADA The Pas Airport Manitoba.	-	216 spent Varsol	-	300 L/yr.	102, landfill
			281 waste oil	-	900 L/yr.	102, landfill
			281 transformer oil	-	900 L/yr.	102, landfill
			532 pesticide containers	9.07 kg	unknown	102, landfill
			536 battery carcasses	36.29 kg	unknown	102, landfill
			536 empty paint cans	-	45 kg/yr.	102, landfill
				TOTAL:	2,145 kg/year	

NOTE: - The airport did not respond to the mail survey of 1985

- The above data were translated from the 1982 completed questionnaire.

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
13.6	TRANSPORT CANADA Thompson Airport Thompson, Manitoba	33	111 battery acid	-	6 L/yr.	109, picked up by scrap dealer; usage not known
			216 emulsifying degreaser (petroleum distillate)	-	80 L /yr.	008, sewer
			217 spent solvent	22 L	615 L /yr.	102, landfill
			281 waste oil	205 L	2,050 L /yr.	102, landfill
			281 aviation fuel (contaminated)	1,640 L	2,050 L /yr.	001, fire training
			289 oily wastes with water	-	unknown	102, landfill (or 008, sewer)
			509 oxygen cylinders	-	40 kg/yr. (2 x 244 cu.ft. cyl./yr.)	101, reuse
			512 spill clean-up	-	150 kg/yr.	102, landfill
			531 contaminated rags	-	136 kg/yr.	102, landfill
			536 Varsol containers	-	20 kg/yr. (2 x 205 L cont./yr.)	102, landfill
			536 paint and other solvent containers	-	6 kg/yr. (29 x 20 L cont./yr.)	102, landfill
			536 aviation fuel containers	25 x 205 L drums	100 kg/yr. (10 x 205 L drums)	101, reuse
			536 battery carcasses	-	60 kg/yr.	101, picked up by scrap dealer
				TOTAL:	5,313 kg/year	

NOTE: Airport also reported: powder detergent (UCD 253); 44 kg/yr; 008, sewer.

INVENTORY OF HAZARDOUS WA. .S FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PRO .CES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
3.7	TRANSPORT CANADA Winnipeg Airport Manitoba	-	281 Waste oil	-	5760 L/yr.	109, Contractor
			216 Spent solvents	-	2160 L/yr.	109, Contractor
			242 PCB	27.22 kg	-	-
			536 Battery Carcasses (lead)	12 units	22.68 kg/yr.	101, Scrap dealer 102, Landfill
			111 Battery acid	-	... /yr.	?

TOTAL: 7,943 kg/year

Note: data translated from the 1982 completed questionnaire.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
14.1	CFS, Beasejour Manitoba	157	281, waste oil and mixed oil	-	960 L /yr.	109, contractor
			216, spent Varsol	-	48 L /yr.	102, landfill
			213, trichlorethane	-	1 L /yr.	011, storag.
			111, battery acid	-	27 L /yr.	011, storage
			242, PCB	91 L	---	011, storage
			536, battery carcasses	45 kg	48 kg/yr.	101, sale
				TOTAL	1,084 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
14.2	CFS, Gypsumville Manitoba	189	281, waste oil	-	2,868 L/yr.	101, recycle
			216, spent solvent	-	684 L/yr.	102, landfill
			241, baygon pesticides	545 L	---	---
			242, PCB	455 L	---	---
			243, expired pharmaceuticals	-	unknown	005, burning
				TOTAL	3,552 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

ility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
, PORTAGE LA PRAIRIE nitoba	596	281 waste oil	-	9,804 L/yr.	004, incineration
		216 spent varsol,ketone, lacquer, toluene	-	4,809 L/yr.	004, incineration
		111 battery acid	-	456 L/yr.	007, neutralized and drained
		281 fuel	-	552 L/yr.	004, incineration
		121 KOH (aircraft batteries)	-	120 L/yr.	008, to sewer after dilution
		167 mercury (batteries)	-	unknown	102, landfill
		167 lithium (batteries)	-	unknown	102, landfill
		224 acetic acid	-	312 L/yr.	008, sewer
		272 expired vaccine	-	1 L/yr.	007, sterilization
		243 expired pharmaceuticals	-	264 kg/yr.	008, sewage system
		513 various reagents	-	456 L/yr.	008, sewer
		528 petridishes with cultures	-	24 kg/yr.	004, autoclaving
		262 paint	-	912 L/yr.	004, incineration
		281 aviation fuel	-	1,824 L/yr.	004, incineration
		536 battery carcasses (vehicles)	-	912 kg/yr.	101, sold
		244 photochemicals and wastes (Sulfuric acid and boric acid)	-	360 L/yr.	101, contractor
		244 photochemicals and wastes (KOH;acetic acid)		296 L/yr.	008, sewer
		212 carbon tetrachloride	-	4 L/yr.	004, incineration
		281 antifreeze	-	540 L/yr.	008, sewer
		281 gasoline	-	6,816 L/yr.	004, incineration
			TOTAL	28,462 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
CFB, Shilo Manitoba	765	281, waste oil		11,844 L/yr.	109, contractor
		216 spent solvent	-	20 L/yr.	004, incineration
		217 superagitene	-	91 L/yr.	109, contractor
		262, paint	-	5 L/yr.	004, incineration
		111, battery acid	-	300 L/yr.	004, incineration
		536 scrap batteries	-	3000 kg/yr.	101, sold
		244 photochemicals and wastes	-	744 L/yr.	008, sewer
			TOTAL:	16,004 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD	Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
14.5	CFB, Winnipeg Manitoba	1981	536	battery carcasses	-	180 kg/yr.	102, landfill
					_	832 kg/yr.	101, recycling
			281	waste oil, fuel, aircraft fluid, ethylene glycol		221,924 L/yr.	109, contractor
			111	battery acid	-	42 L/yr.	008, sewer
					-	308 L/yr.	007, neutralization
			216	solvent	-	1,818 L/yr.	109, contractor
			217	solvent	-	180 L/yr.	011, storage
			111	chromic acid, nitric acid	-	68 L/yr.	008, sewer
			241	surplus pesticides	284 kg	---	011, storage
			262	paints	-	330 kg/yr.	102, landfilling
					-	136 kg/yr.	109, contractor
			513	unidentified chemicals	4 kg	---	011, storage
			216	paint thinner	-	360 L/yr.	109, contractor
			112	HCl	-	9 L/yr.	007, neutralization
			161	asbestos	2 kg	---	011, storage
			144	X-ray developer, fixer	-	996 L/yr	008, sewer
					TOTAL:	227,183 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
15.	PORTS CANADA, Port of Churchill, Manitoba	-	111 battery acids	-	12 L/yr.	102, with batteries
			215 spent Varsol	-	696 L/yr.	101, dust suppression 005, burning
			281 waste oil	-	2,000 L/yr.	101, dust suppression 005, burning
			242 * electromagnets and transformers (PCB)	2,090 L	-	011, storage room
			536 battery carcasses	-	120 kg/yr. (6/yr.)	102, landfill
				TOTAL:	2,828 kg/year	

* electromagnets: case dimensions 4'x3'x2'; quantity of coolant in each is estimated to be 50% of total volume

electromagnets + 2 small transformers = 2,090 L

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
16. Royal Canadian Mint Winnipeg, Manitoba	...	144 neutralized process waste *	-	11,364 metric tons/ year	008, sewer

TOTAL: $11,364 \times 10^3$ kg/year

* deemed to be nonhazardous

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.1	AGRICULTURE CANADA Experimental Farm Indian Head, Sask.	-	111, battery acid	-	5 L/yr.	101
			536, battery boxes, etc.	-	5 kg/yr.	101
			241, pesticide and wastes	246.88 kg surplus pesticide	small amount	003
			532, empty pesticide cans	-	5 kg/yr.	101
			281, waste oil and mixed oil	-	400 L/yr.	005
			289, oily wastes with water	-	3,000 L/yr.	006
			509, empty oxygen cylinder	-	unknown	101
			511, rinse water and wastewater	-	6,900 L/yr.	006
			511, rinse water and wastewater	-	2,300 L/yr.	108
			212, spent solvent - degreasing engines and motors	-	5 L/yr.	005
			215, spent solvent - cleaning, painting equipment	-	10 L/yr.	005

TOTAL: 12,630 kg/year

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.2	AGRICULTURE CANADA Melfort Research Station Melfort, Saskatchewan	43	281 waste motor oil	-	2,362 kg/yr.	001, fuel for burning dead animals; dust control
			281 waste motor oil	-	2,362 kg/yr.	102, city dump
			536 used battery	-	400 kg/yr.	101, sent to dealer
			272 livestock manure	-	1,500,000 kg/yr.	006, land application
			217 spent solvent	-	45 L/yr.	001, recovered, reused
			217 spent solvent	-	small amount	005, placed in a drum and burned off
				TOTAL:	1,505,169 kg/year	

- It is estimated by this author that half of the waste motor oil was disposed of in a city dump.
- Waste generation rates were obtained by telephone interviews.

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.3 AGRICULTURE CANADA Regina Research Station Regina, Saskatchewan	44	536 battery cases	-	unknown	011
		532 pesticide cans (rinsed)	-	1 kg/yr. (10 cans/yr.)	103
		216 ether, acetone, methanol	-	240 L/yr.	005
		281 used oil	-	160 L/yr.	011
		244 photochemicals and wastes	-	4 L/yr.	008
		241 pesticides and wastes	-	50 L/yr.	011
			TOTAL:	455 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.4	AGRICULTURE CANADA Research Station Swift Current, Sask.	110	244 photochemicals & wastes	-	800 L/yr.	008, sewer
			536 battery carcasses	23 L	460 kg/yr.	102, garbage
			111 battery acids	46 L	46 L/yr.	102, garbage
			216 solvent (Varsol)	-	800 L/yr.	001, spread on dirt roadway
			281 used automotive oil	-	1,500 L/yr.	001, spread on dirt roadway
			513 lab waste chemicals (sodium chromate)	-	48 kg/yr.	008, sewer
			241 kelthane, pentac, thiodan, dibsom, captan, etc. (pesticides)	-	15 kg/yr.	011, placed in chem.stores, waiting for disposal instructions
			532 fumigant cans	-	1 kg/yr. (many)	102, disposed off in garbage
			243 veterinary med.empty bottles, and injection needles, etc.	-	6 kg/yr. (40/50 bottles; 250/300 needles)	102, garbage
			216 petroleum ether, ethyl ether	-	121 L/yr.	005, burned
			272 turkey and sheep feces	-	1,000 kg/yr. (tonnes)	102, landfill
			272 turkey meat, skin	-	7 kg/yr.	102, garbage
			281 vacuum pump oil; mixed oil	-	42 L/yr.	102, garbage
			165 titanious chloride	-	0.3 kg/yr.	008, sewer
			111 H_2SO_4, HCl	-	210 L/yr.	008, sewer
			151 carbon black	-	8 kg/yr.	008, sewer
			257 phenolic loose crystal	-	12 kg/yr.	008, sewer
			112 phosphoric acid	-	30 L/yr.	008, sewer

/continued ...

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.4	AGRICULTURE CANADA Research Station Swift Current, Sask.	110	217 solvent (methanol, ethanol)	-	14 L/yr.	008, sewer
			215 acetone	-	2 L/yr.	008, sewer
			111 mercuric thiocyanate; selenium & H_2SO_4	-	0.2 kg/yr.	008, sewer
			216 methanol, acetone	-	45 L/yr.	008, sewer
			536* herbicide & pesticide containers	-	12 kg/yr. (60/yr.)	102, landfill
				TOTAL:	5,179 kg/year	

* Approx. 60 herbicide/pesticide containers are disposed of at the municipal Wymark landfill site each year as per verbal agreement with R.M. Manager. Approx. 20 cans are rinsed out and used as containers for feed and seed.

	Facility (1)	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.5	AGRICULTURE CANADA Animal Pathology Lab Saskatoon, Saskatchewan	39	111 acidic solutions (hydrochloric, nitric, sulphuric, perchloric) containing heavy metals (arsenic, cadmium, lead, mercury, selenium, zinc)	-	81 L /yr.	007, evaporation
			111 same as above (dilute)	-	1.5 L /yr.	008, sewer
			111 1000 ppm Cd, Pb, Zn, Se standard solutions	-	1 L /yr.	103, landfill
			113 other acidic solutions (dilute hydrochloric, acetic, sulfuric, perchloric)	-	12 L /yr.	008, sewer
			123 dilute alkaline solutions (NaOH, KOH)	-	6 L /yr.	008, sewer
			144 other salt solutions - (buffers) Na, K, ammonium salts of acetate, phosphate, citrate		24 L /yr.	008, sewer
			144 boiler chemical	-	400 L /yr.	008, sewer
			145 brine (water softener)	-	750 L /yr.	008, sewer
			152 inorganic chemicals - aged or surplus - miscellaneous	10 kg	13 kg/yr.	103, landfill
			213 spent dichloromethane	-	75 L /yr.	007, evaporation
			224 other organic liquids (silylating reagents)	-	0.5 L /yr.	103 landfill
			225 aqueous solutions, < 10% organic residues (sulfonamides, antibiotics, coccidiostats, growth promoter)	-	48 L /yr.	008, sewer
			226 aqueous solutions, < 10% halogenated residues (PCP)	-	24 L /yr.	008, sewer

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility (2)	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
17.5	AGRICULTURE CANADA Animal Pathology Lab. Saskatoon, Saskatchewan	39	241 pesticide - lab standards, 100 ppm solutions, eg- DDT, aldrin, dieldrin	-	1 L/yr.	103, landfill
			241 spent solvents - non-halogenated, containing trace residues of pesticides, industrial pollutants (PCB, PCP), antibiotics, sulfonamides, coccidiostats or growth promoters	-	1,777 L/yr.	103, landfill
			241 spent solvents - dichloromethane, chloroform, containing residues same as above	-	177 L/yr.	103 landfill
			242 PCB, PCP - lab standards, 100 ppm solution	-	1 L/yr.	103, landfill
			243 pharmaceuticals, lab standards, sulfas, antibiotics, growth promoters, coccidiostate		3 L/yr.	103, landfill
			243 same as above		1 kg/yr.	103, landfill
			245 off specification or aged organic chemicals - miscellaneous	10 kg	30 kg/yr.	103, landfill
			272 biological wastes - animal tissue	-	2,010 kg/yr.	004, incineration
			272 same as above - media	-	330 kg/yr.	004, autoclaving
			281 waste oil	-	30 L/yr.	103, landfill
			528 pathogenic wastes - animal tissues	-	7 kg/yr.	004, incineration
			528 pathogenic wastes - media	-	6 kg/yr.	004, autoclaving
			536 solvent containers (glass)	-	30 kg/yr. (100-4 Lbottles/yr.)	103, landfill
				TOTAL:	5,839 kg/year	

18.1 ENVIRONMENT CANADA
Water Quality Branch (Field Lab)
Regina, Saskatchewan

3

113	inorganic acids	-	8 L/yr.	008, dilution and drain
123	alkaline solutions	-	4 L/yr.	008, dilution and drain
152	inorganic chemicals	10 kg	2 kg/yr.	011, held in storage
		TOTAL:	14 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
19.1	NATIONAL RESEARCH COUNCIL Plant Biotechnology Institute Saskatoon, Saskatchewan		213 chloroform and methylene chloride	-	136 L/yr.	109
			216 spent solvent	-	144 L/yr.	109
			216 hexanes	-	173 L/yr.	109
			216 ether (dioxane)	-	148 L/yr.	109
			216 acetone	-	33 L/yr.	109
			216 ethyl acetate	-	63 L/yr.	109
			216 miscellaneous solvents	-	216 L/yr.	109
			217 alcohols (methyl , ethyl, etc.)	-	119 L/yr.	109
			241 pesticide	-	10 L/yr.	011
			513 surplus lab chemicals (diverse)	-	unknown	109
			532 empty pesticide containers	-	1 kg/yr. (7-8/yr.)	102
				TOTAL:	1,043 kg/year	

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.1	C.F.S. Alsask Saskatchewan	182...	289 Antifreeze wastes	-	409 L /yr.	110, Contractor
			111, Battery electrolite	-	45 L /yr.	007, Neutralization - sewer
			216, Varsol	-	522 L /yr.	001, Fire training
			281, Lubricating oil	-	818 L /yr.	109, Contractor
			536, Battery carcasses	-	27 kg/yr.	101, CADC
			281, # oil	-	204 L /yr.	101, Picked up by refinery
			217, Solvent	-	91 L /yr.	101, Picked up by refinery
			241, Pesticides	-	91 L /yr.	109, Picked up by Provincial government
			441, Lime sludge (30,000# lime)	-	9,000 kg/yr.	011, Impounding (lagoon)
			242, PCB	4.5 kg	-	011, Storage room
			213, Trichlorotrifluoroethane	-	45 L /yr.	007, Evaporation
			216, Isopropanol	-	45 L /yr.	007, Evaporation
			281, Transformer oil	-	204 L /yr.	101, Returned to supplier
			262, Latex	-	545 L /yr.	008, Down the sewer
			454, Paint sludge	-	908 L /yr.	005, Burning

TOTAL: 12,954 kg/year

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.2	CFS, Dana Sagehill, Saskatchewan	181	281, waste oil from compressors	-	91 L /yr.	109, contractor
			281, solvents & used oil	-	681 L /yr.	109, contractor
			441, lime soda ash slurry	-	1,090,000 L /yr.	102, landfill
			536, scrap batteries	-	120 kg/yr. (6 /yr.)	101, recycle
				TOTAL:	1,090,892 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.3 CFB, Det Dundurn Saskatchewan	–	217, paint thinners, stripper	-	55 L/yr.	109, contractor
		215, varsol, hydrocarbons	-	3,588 L/yr.	109, contractor
		281, waste oil	-	6,813 L/yr.	109, contractor
		111, battery acid	-	100 L/yr.	008, sewer
		536, battery carcasses	-	1,000 kg/yr. (50/yr.)	101, contractor
			TOTAL	11,556 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.4	CFB, Moose Jaw Bushell Park, Saskatchewan	1199	111, demineralizer regenerant	-	1363 L/yr.	008, sewer
			141, aqueous solution with heavy metal (Ag, Mn, Cr)	-	592 L/yr.	008, sewer
	- base construction & engineering -		217, paint thinner	-	590 L/yr.	109, contractor
			216, varsol	-	1,113 L/yr.	109, contractor
			281, compressor oil	-	91 L/yr.	109, contractor
			242, PCB fluid	248	--	011, storage room
			281, cutting oil	-	23 L/yr.	011, oil can
			532, pesticide containers	-	unknown	005, open burning
	- aro J85 engine bay -		217, methyl hydrate	-	9 L/yr.	011, underground holding tank
			253, detergent degreaser	-	2,452 L/yr.	011, " " "
			224, tricresyl phosphate	-	2,400 L/yr.	011, " " "
			216, varsol	-	908 L/yr.	011, " " "
			281, grease	-	114 kg/yr.	101, recycling
			213, Freon	-	818 L/yr.	101, recycling
			217, alcohol	-	114 L/yr	007, evaporation
			217, carbon remover	-	57 L/yr.	109, contractor
			281, hydraulic fluid	-	1,703 L/yr.	101, recycling

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
0.4	CFB, Moose Jaw Bushell Park, Sask.	- aircraft servicing -	216, spent solvent	-	341 L /yr.	007, evaporation
			216, Varsol	-	852 L /yr.	011, unknown
		- aircraft snag repair -	217, cleaning solvents	-	1,703 L /yr.	011, underground storage tanks
			217, de-icer fluid	-	170 L /yr.	007, evaporation
		- flight simulator -	216, Varsol	-	11 L /yr.	011, oil storage tank
		-safety system	243, pharmaceuticals	-	unknown	111, return to pharmacist
		- refinishing/ workshops -	111, chromic acid	-	76 L /yr.	008, sewer
			217, denatured alcohol	-	76 L /yr.	109, contractor
			217, carbon remover	-	170 L/yr.	109, contractor
			212, trichloroethane	-	38 L /yr.	007, evaporation
			111, phosphoric acid	-	388 L/yr.	008, sewer
			217, paint removal	-	1,779 L/yr.	008, sewer
		- ground support equipment -	281, waste oil	-	2,500 L/yr.	109, contractor
			281, hydraulic fluid	-	90 L /yr.	109, contractor
			216, Varsol	-	615 L /yr.	109, contractor
			536, paint containers	-	7 kg/yr. (36 cans/yr.)	102, landfill
			281, compressor oil	-	5 L /yr.	109, contractor

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
0.4	CFB, Moose Jaw Bushell Park, Sask.	- non-destructive testing facility -	536, aerosol cans	-	75 kg/yr. (750 - 16 oz. cans/yr.)	102, landfill
			221, dyes	-	4 L/yr.	008, sewer
			244, photochemicals and wastes	-	unknown	008, sewer
			536, cleaner cans	-	20 kg/yr. (200 - 500 ml containers)	102, landfill
			224, methyl isobutal ketone	-	227 L/yr.	011, storage room
			224, bayol	-	76 L/yr.	011, underground tank
		- base photo section -	244, photochemicals and wastes	-	5,256 L/yr.	008, sewer
		- base management land -	111, battery acid	-	50 L/yr.	011, removed by CE section
			536, battery carcasses	-	500 kg/yr.	101, return to supplier
			281, waste oil, antifreeze, grease	-	17,990 L/yr.	109, contractor
			214, Varsol, methyl hydrate, isopropenol	-	1,764 L/yr.	109, contractor
		- base supply section -	217, cleaning solvent	-	5,110 L/yr.	109, contractor
			214, Keytone	-	852 L/yr.	109, contractor
			281, waste oil, antifreeze	-	12,799 L/yr.	109, contractor

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.4	CFB, Moose Jaw Bushell Park, Sask.	- base hospital -	528, pathogenic wastes	-	90 kg/yr.	004, autoclaving
			243, expired pharmaceuticals	-	5 kg/yr.	004, incineration
			146, potassium cyanide	-	10 L/yr.	008, sewer
		- dental unit equipment -	161, asbestos	-	unknown	008, sewer
			144, dental X-ray developer and fixer	-	109 L/year	008, sewer
				TOTAL	66,105 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream		Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
20.5	C.F.S. YORKTON White Spruce, Saskatchewan	...	281	Insulating oil	-	409 L /yr.	001, fire training
				Gear lubricant	-	273 L /yr.	001 fire training
				Lube oil & glycol	-	3179 L /yr.	001, fire training
			217	Spent solvent	-	1022 L /yr.	001, fire training
			216	Degreaser	-	27 L /yr.	007, evaporation
				Wax remover	-	91 L /yr.	008, sewage system & 007, evaporation
			536	Paint containers	-	small amount	005, burning
			243	Pharmaceuticals	-	23 kg/yr.	004, incineration
			111	Battery acid	-	136 L /yr.	011, leaching pit
			536	Battery carcasses	-	136 kg/yr.	101, scrap dealer
			283	Oily sludge	-	2725 L /yr.	102, landfill
			289	Oil & water	-	8176 L /yr.	102, landfill
				Grease & water	-	2725 L /yr.	102, landfill
			244	Photochemicals	-	18 L /yr.	011, impounding (lagoon)

TOTAL: 18940 kg/year

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
21.1	SOLICITOR GENERAL Saskatchewan Penitentiary Prince Albert, Sask.	311	509 oxygen cylinders	-	unknown	101, exchange
				TOTAL:	unknown	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
22.1	TRANSPORT CANADA Regina Airport Regina, Saskatchewan	80	111 battery acid	-	10 L/yr.	109, returned with battery carcasses to contractor
			217 alcohol (de-icing fluid)	-	4,542 L/yr.	008, diluted/sewer system
			241 herbicide cans	-	2 kg/yr. (10 - 5 gal. containers)	109, contractor
			242 PCB	45 L	--	011, on-site storage (containers)
			281 lubricating oil	-	2,271 L/yr.	101, recycled by contractor
			536 battery carcasses	-	100 kg/yr	101, contractor/returned salvage
				TOTAL	6,925 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
2.2	TRANSPORT CANADA Saskatoon Airport Saskatoon, Sask.	30	216 Varsol	10 L	200 L /yr.	109, contractor
			281 lubricating oil	200 L	600 L /yr.	109, contractor
			532 empty pesticide containers	-	5 kg/yr.	102, landfill
			536 latex paint containers	-	4 kg/yr.	102, landfill
			536 battery carcasses	-	200 kg/yr.	102, landfill
				TOTAL:	1,009 kg/year	

INVENTORY OF HAZARDOUS WASTES FROM FEDERAL ESTABLISHMENTS IN PRAIRIE PROVINCES

	Facility	Number of Employees	UCD Code and Waste Stream	Waste Quantity Presently Held	Waste Generation Rate	Treatment/Disposal
22.3	TRANSPORT CANADA Yorkton Airport Saskatchewan	2	281 lubricating oil	-	400 L /yr.	109, contractor
				TOTAL:	400 kg/year	